

1 (currently amended). A method for securing and controlling a micro-mirror, the method comprising:

directly connecting three or more supporting springs to a micro-mirror at selected spaced apart locations to provide a restoring force for each of at least two rotational degrees of freedom of movement of the micro-mirror, where the spring connection locations form a conceptual polygon and the supporting springs maintain a length-to-thickness ratio selected so that the supporting springs operate primarily in a tensile mode; and

electro-statically actuating the micro-mirror by three or more spaced apart driving electrodes located adjacent to the micro-mirror, with each driving electrode being independently controlled [[,]] ; and

~~wherein the supporting springs maintain a length-to-thickness ratio selected so that the supporting springs operate primarily in a tensile mode ; and providing the micro-mirror with a frame including dielectric material positioned close to at least one edge of the micro-mirror and positioned between a first material layer that contains the micro-mirror and a second material layer that contains the supporting springs.~~

2. The method of claim 1, further comprising providing a voltage of less than 100 volts between said micro-mirror and said electrodes.

3. The method of claim 1, further comprising associating at least two enhancement springs with at least one of said supporting springs to enhance stability and to provide a selected tilting range for said micro-mirror.

4. The method of claim 3, further comprising orienting at least one of said enhancement springs perpendicular to said associated supporting spring.

5. The method of claim 3, further comprising fanning out at least one of said enhancement springs from said associated supporting spring with a selected angle to said associated supporting spring.

6. The method of claim 5, further comprising selecting said angle between said supporting spring and at least one of said associated enhancement springs to be between 90 degrees and 180 degrees.

7 (currently amended). The method of claim 3, further comprising configuring at least one of said supporting springs and said associated enhancement springs so that said restoring force between said at least one supporting spring and said micro-mirror increases with a measure  $u$  of spring deflection approximately as  $a \cdot u + b \cdot u^2 + c \cdot u^3$ , where  $a$ ,  $b$  and  $c$  are selected parameters non-zero numbers.

8 (currently amended). The method of claim 3, further comprising configuring at least one of said supporting springs and said associated enhancement springs so that said restoring force between said at least one supporting spring and said micro-mirror increases with a measure  $u$  of spring deflection approximately as  $a \cdot u + c \cdot u^3$ , where  $a$  and  $c$  are selected parameters non-zero numbers.

9 (canceled). The method of claim 1, further comprising providing said micro-mirror with a frame including dielectric material positioned close to at least one edge of said micro-mirror and positioned between a first material layer that contains said micro-mirror and a second material layer that contains said

supporting springs.

10 (currently amended). The method of claim [[9]] 1, further comprising providing said dielectric material as a discontinuous buried layer.

11 (canceled). The method of claim 1, further comprising providing one or more neutral electrodes positioned adjacent to said micro-mirror, where the neutral electrodes and said adjacent micro-mirror have substantially the same electrical potential.

12 (currently amended). The method of claim [[11]] 37, further comprising locating at least one of said neutral electrodes substantially at the center of said micro-mirror.

13. The method of claim 1, further comprising positioning said supporting springs and recessing said micro-mirror so that a net electro-static force generated by said driving electrodes is directed outside of said conceptual polygon when said micro-mirror is in operation.

14. The method of claim 1, further comprising recessing said micro-mirror in at least one selected location to connect said supporting springs thereto to provide a selected tilting range for said micro-mirror.

37 (new). A method for securing and controlling a micro-mirror, the method comprising:

directly connecting three or more supporting springs to a micro-mirror at selected spaced apart locations to provide a restoring force for each of at least

two rotational degrees of freedom of movement of the micro-mirror, where the spring connection locations form a conceptual polygon and the supporting springs maintain a length-to-thickness ratio selected so that the supporting springs operate primarily in a tensile mode;

electro-statically actuating the micro-mirror by three or more spaced apart driving electrodes located adjacent to the micro-mirror, with each driving electrode being independently controlled, and

providing one or more neutral electrodes positioned adjacent to the micro-mirror, where the neutral electrodes and the adjacent micro-mirror have substantially the same electrical potential.

38 (new). The method of claim 37, further comprising providing a voltage of less than 100 volts between said micro-mirror and said electrodes.

39 (new). The method of claim 37, further comprising associating at least two enhancement springs with at least one of said supporting springs to enhance stability and to provide a selected tilting range for said micro-mirror.

40 (new). The method of claim 39, further comprising orienting at least one of said enhancement springs perpendicular to said associated supporting spring.

41 (new). The method of claim 39, further comprising fanning out at least one of said enhancement springs from said associated supporting spring with a selected angle to said associated supporting spring.

42 (new). The method of claim 41, further comprising selecting said angle between said supporting spring and at least one of said associated enhancement springs to be between 90 degrees and 180 degrees.

43. The method of claim 39, further comprising configuring at least one of said supporting springs and said associated enhancement springs so that said restoring force between said at least one supporting spring and said micro-mirror increases with a measure  $u$  of spring deflection approximately as  $a \cdot u + b \cdot u^2 + c \cdot u^3$ , where  $a$ ,  $b$  and  $c$  are selected parameters.

44 (new). The method of claim 39, further comprising configuring at least one of said supporting springs and said associated enhancement springs so that said restoring force between said at least one supporting spring and said micro-mirror increases with a measure  $u$  of spring deflection approximately as  $a \cdot u + c \cdot u^3$ , where  $a$  and  $c$  are selected parameters.